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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/602,507	06/24/2003	Mary F. Doerner	HSJ920030065US1	2167

44425 7590 01/21/2005

THOMAS R. BERTHOLD
18938 CONGRESS JUNCTION COURT
SARATOGA, CA 95070

EXAMINER

RICKMAN, HOLLY C

ART UNIT	PAPER NUMBER
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1773

DATE MAILED: 01/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

18

Office Action Summary

Application No.

10/602,507

Applicant(s)

DOERNER ET AL.

Examiner

Holly Rickman

Art Unit

1773

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 November 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 4 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 4 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The rejection of claims 1-3 under 35 U.S.C. 102(b) as being anticipated by Iwao et al. (JP 2001-056925) is withdrawn in view of the cancellation of the claims.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. The rejection of claim 5 under 35 U.S.C. 103(a) as being unpatentable over Chen et al. (US 6759149) in view of Iwao et al. (JP 2001-056925) is withdrawn in view of the cancellation of the claim.

4. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al. (US 6759149) in view of Iwao et al. (JP 2001-056925).

Chen et al. teaches a magnetic recording medium having pairs of Co alloy magnetic layers antiferromagnetically coupled across Ru-containing coupling layers. The reference teaches the use of a nonmagnetic CoCr spacer layer between the antiferromagnetically coupled magnetic layer pairs (see abstract and Fig 3). The reference also teaches that the Mrt values of the antiferromagnetically coupled Co alloy magnetic layers are not equal (i.e., the disclosed

Art Unit: 1773

media set forth in the examples have overall Mrt values greater than zero. If the Mrt values of the individual layers were equal, the overall Mrt value would be zero). The reference fails to teach the use of a Ru-Fe coupling layer.

Iwao et al. teach a magnetic recording medium having Co alloy layers that are antiferromagnetically coupled across a RuFe coupling layer. The reference teaches that the addition of Fe to a Ru coupling layer in an amount up to 60 at% improves the lattice matching of the coupling layer with the adjacent Co alloy layers (see paragraphs 12-13).

Thus, it would have been obvious to one of ordinary skill in the art at the time of invention to add Fe to the Ru coupling layers taught by Chen et al. as suggested by Iwao et al. in order to improve lattice matching between the magnetic layers and the Ru-containing coupling layers. Furthermore, it would have been obvious to determine the optimal amount of Fe to add to the alloy to achieve the optimal lattice matching since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Response to Arguments

5. Applicant's arguments filed 11/7/04 have been fully considered but they are not persuasive.

Applicant argues that Chen in view of Okamoto et al. fails to teach or suggest that the RuFe layer "improves the exchange coupling between the two ferromagnetic films by a factor of two." Applicant argues that this is the purpose of adding Fe to the claimed Ru coupling film

Art Unit: 1773

whereas Iwao teaches that adding Fe to the Ru layer taught therein is solely to improve lattice matching.

Applicant's argument is directed to the function of the claimed RuFe layer. This function is not claimed and even if it was claimed, it does not appear to distinguish over the prior art because Iwao teaches the claimed coupling layer composition. Thus, one of ordinary skill in the art would expect the same compositions to have the same functional properties.

Furthermore, Applicant argues that the claimed structure requires a *single* ferromagnetic film separated by a non-antiferromagnetic coupling spacer film whereas Iwao teaches two ferromagnetic layers disposed above this non-AF coupling layer. It is noted that the claims use "comprising"-language and therefore do not exclude the presence of unrecited layers.

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

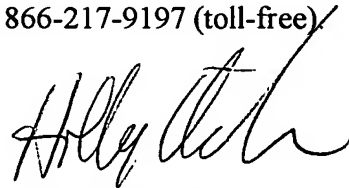
A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Art Unit: 1773

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Holly Rickman whose telephone number is (571) 272-1514. The examiner can normally be reached on Monday-Friday 9:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Deborah Jones can be reached on (571) 272-1535. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Holly Rickman
Primary Examiner
Art Unit 1773

January 18, 2005